WHAT IS CLAIMED IS:

1. An apparatus for analyzing overlay deviation in alignment between a first mark and a second mark that are formed on a substrate, the apparatus comprising a controller that:

calculates a relationship between changes in overlay deviation values and changes in focus position of the substrate for a plurality of sets of the first and second marks that are provided on the substrate; and

provides an output from which a user can determine whether the substrate suffers from wafer-induced-shift.

2. The apparatus according to claim 1, wherein the controller determines a vector-map illustrating the calculated relationship for the plurality of different sets of first and second marks on the substrate; and the apparatus further comprises a display electrically coupled to the controller to display the vector-map.

3. The apparatus according to claim 1, wherein the controller also determines a relationship between changes in tool-induced-shift error values and changes in focus position of the substrate for the plurality of sets of the first and second marks that are provided on the substrate.

4. The apparatus according to claim 3, wherein the controller also compares the determined relationship between changes in overlay deviation values and changes in focus position with the determined relationship between changes in tool-induced-shift error values and changes in focus position.

5. The apparatus according to claim 3, wherein the controller:

determines a first vector-map illustrating the calculated relationship between changes in tool-induced-shift error values and changes in focus position for the plurality of different sets of first and second marks on the substrate;

determines a second vector-map illustrating the calculated relationship between changes in overlay deviation values and changes in focus position of the substrate for the plurality of different sets of first and second marks on the substrate; and wherein the apparatus further comprises:

a display electrically coupled to the controller to display the first and second vector-maps.

6. The apparatus according to claim 1, wherein the controller calculates the relationship between changes in overlay deviation values and changes in focus position of the

substrate for each of the plurality of sets of the first and second marks by determining an overlay deviation value for each of the sets of marks at two different focus positions of the substrate.

7. The apparatus according to claim 6, wherein the controller determines each of the overlay deviation values by:

determining a positional deviation value in alignment between the first mark and the second mark by processing an image signal obtained from a captured image of the first and second marks,

determining a tool-induced-shift error value from the obtained image signal, and

determining an overlay deviation value based on the positional deviation value and the tool-induced-shift error value.

8. An optical overlay deviation measurement apparatus for optically measuring overlay deviation in alignment between a first mark and a second mark that are formed on a substrate, the apparatus comprising:

a substrate holder that holds the substrate having the first mark and the second mark, the substrate holder being movable at least in an optical axis direction that is substantially perpendicular to a surface of the substrate;

an illumination optical system that illuminates the first and second marks of the substrate held by the substrate holder with an illumination beam;

an image-forming optical system that forms an image of the first and second marks from reflected beams reflected from the first and second marks;

an imaging device that captures the image of the first and second marks formed by the image-forming optical system; and

a controller that:

determines a first positional deviation value in alignment between the first mark and the second mark by processing an image signal obtained by the imaging device at a first focus position of the substrate in the optical axis direction,

determines a first tool-induced-shift error value from the image signal obtained at the first focus position of the substrate in the optical axis direction,

determines a first overlay deviation value based on the first positional deviation value and the first tool-induced-shift error value,

determines a second positional deviation value in alignment between the first mark and the second mark by processing an image signal obtained by the imaging device at a second focus position of the substrate in the optical axis direction, the second focus position being different from the first focus position in the optical axis direction,

determines a second tool-induced-shift error value from the image signal obtained at the second focus position of the substrate,

determines a second overlay deviation value based on the second positional deviation value and the second tool-induced-shift error value,

calculates a relationship between changes in overlay deviation values and changes in focus position based upon the determined first and second overlay deviation values and the first and second focus positions, and

provides an output from which a user can determine whether the substrate suffers from wafer-induced-shift.

9. The apparatus according to claim 8, further comprising a display, and wherein the controller determines a vector-map illustrating the calculated relationship for different coordinate values on the substrate, and the display displays the vector-map.

10. The apparatus according to claim 8, further comprising a rotation system that rotates the substrate holder about the optical axis direction, and wherein each of the first and second positional deviation values are determined from measurements taken at two different rotational orientations of the substrate.

11. The apparatus according to claim 10, wherein the two different rotational orientations differ from each other by 180°.

12. The apparatus according to claim 8, wherein the controller also determines a relationship between changes in tool-induced-shift error values and changes in focus position based upon the determined first and second determined tool-induced-shift error values and the first and second focus positions.

13. The apparatus according to claim 12, wherein the controller also compares the determined relationship between changes in overlay deviation values and changes in focus position with the determined relationship between changes in tool-induced-shift error values and changes in focus position.

14. The apparatus according to claim 12, further comprising a display, and wherein the controller determines a vector-map illustrating the calculated relationship between

changes in tool-induced-shift error values and changes in focus position for different coordinate values on the substrate, and the display displays the vector-map.

15. The apparatus according to claim 8, wherein the apparatus calculates the relationship between changes in overlay deviation values and changes in focus position for a plurality of sets of first and second marks disposed on the substrate.

16. A method of analyzing optical overlay deviation in alignment between a first mark and a second mark that are formed on a substrate, the method comprising the steps of:

calculating a relationship between changes in overlay deviation values and changes in focus position of the substrate for a plurality of sets of the first and second marks that are provided on the substrate; and

providing an output from which a user can determine whether the substrate suffers from wafer-induced-shift.

17. The method according to claim 16, further comprising:

determining a vector-map illustrating the calculated relationship for the plurality of different sets of first and second marks on the substrate; and

wherein the output is displaying of the vector-map on a display.

18. The method according to claim 16, further comprising:

determining a relationship between changes in tool-induced-shift error values and changes in focus position of the substrate for the plurality of sets of the first and second marks that are provided on the substrate.

19. The method according to claim 18, further comprising:

comparing the determined relationship between changes in overlay deviation values and changes in focus position with the determined relationship between changes in tool-induced-shift error values and changes in focus position.

20. The method according to claim 18, further comprising:

determining a first vector-map illustrating the calculated relationship between changes in tool-induced-shift error values and changes in focus position for the plurality of different sets of first and second marks on the substrate;

determining a second vector-map illustrating the calculated relationship between changes in overlay deviation values and changes in focus position of the substrate for the plurality of different sets of first and second marks on the substrate; and

wherein the output is displaying of the first and second vector-maps on a display.

21. The method according to claim 16, wherein the relationship between changes in overlay deviation values and changes in focus position of the substrate is calculated for each of the plurality of sets of the first and second marks by determining an overlay deviation value for each of the sets of marks at two different focus positions of the substrate.

22. The method according to claim 21, wherein each of the overlay deviation values is determined by:

determining a positional deviation value in alignment between the first mark and the second mark by processing an image signal obtained from a captured image of the first and second marks,

determining a tool-induced-shift error value from the obtained image signal, and

determining an overlay deviation value based on the positional deviation value and the tool-induced-shift error value.

23. A method of analyzing optical overlay deviation in alignment between a first mark and a second mark that are formed on a substrate, the method comprising the steps of:

holding the substrate having the first mark and the second mark, such that the substrate is movable at least in an optical axis direction that is substantially perpendicular to a surface of the substrate;

illuminating the first and second marks of the held substrate with an illumination beam;

forming an image of the first and second marks from reflected beams reflected from the first and second marks;

capturing the image of the first and second marks formed from the reflected beams;

determining a first positional deviation value in alignment between the first mark and the second mark by processing an image signal obtained from the captured image at a first focus position of the substrate in the optical axis direction,

determining a first tool-induced-shift error value from the image signal obtained at the first focus position of the substrate in the optical axis direction,

determining a first overlay deviation value based on the first positional deviation value and the first tool-induced-shift error value,

determining a second positional deviation value in alignment between the first mark and the second mark by processing an image signal obtained from the captured image at

a second focus position of the substrate in the optical axis direction, the second focus position being different from the first focus position in the optical axis direction,

determining a second tool-induced-shift error value from the image signal obtained at the second focus position of the substrate,

determining a second overlay deviation value based on the second positional deviation value and the second tool-induced-shift error value,

calculating a relationship between changes in overlay deviation values and changes in focus position based upon the determined first and second overlay deviation values and the first and second focus positions, and

providing an output from which a user can determine whether the substrate suffers from wafer-induced-shift.

24. The method according to claim 23, further comprising:

determining a vector-map illustrating the calculated relationship for different coordinate values on the substrate; and

displaying the vector-map as the output on a display.

25. The method according to claim 23, further comprising:

rotating the held substrate about the optical axis direction;

wherein each of the first and second positional deviation values are determined from measurements taken at two different rotational orientations of the substrate.

26. The method according to claim 25, wherein the two different rotational orientations differ from each other by 180°.

27. The method according to claim 23, further comprising:

determining a relationship between changes in tool-induced-shift error values and changes in focus position based upon the determined first and second determined tool-induced-shift error values and the first and second focus positions.

28. The method according to claim 27, further comprising:

comparing the determined relationship between changes in overlay deviation values and changes in focus position with the determined relationship between changes in tool-induced-shift error values and changes in focus position.

29. The method according to claim 27, further comprising:

determining a vector-map illustrating the calculated relationship between changes in tool-induced-shift error values and changes in focus position for different coordinate values on the substrate; and

displaying the vector-map as the output on a display.

30. The method according to claim 23, wherein the calculating step includes calculating the relationship between changes in overlay deviation values and changes in focus position for a plurality of sets of first and second marks disposed on the substrate.

31. An apparatus for analyzing overlay deviation in alignment between a first mark and a second mark that are formed on a substrate, the apparatus comprising a controller that:

calculates a vector-trend illustrating a relationship between changes in overlay deviation values and changes in focus position of the substrate for a plurality of sets of the first and second marks that are provided on the substrate.

32. A method of analyzing optical overlay deviation in alignment between a first mark and a second mark that are formed on substrates, the method comprising the steps of:

calculating a first relationship between changes in overlay deviation values and changes in focus position of a first substrate for a plurality of sets of the first and second marks that are provided on the first substrate;

calculating a second relationship between changes in overlay deviation values and changes in focus position of a second substrate for a plurality of sets of the first and second marks that are provided on the second substrate; and

determining a shift in wafer-induced-shift by comparing the first relationship with the second relationship.